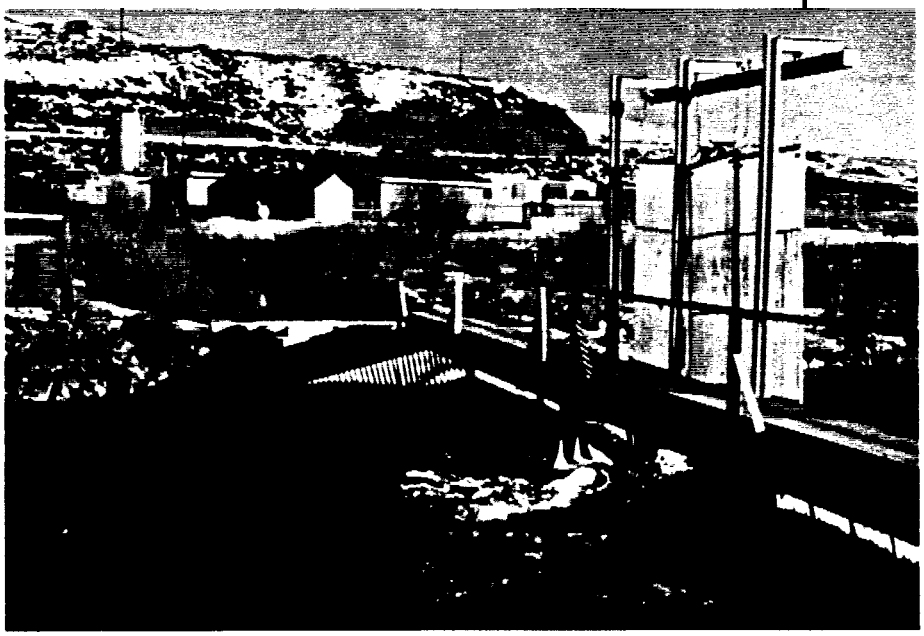
Idaho Power

PAHSIMEROI HATCHERY
1987 Chinook Salmon Brood Year Report



by

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TABLE OF CONTENTS

Page

ABSTRACT 1

INTRODUCTION 2

OBJECTIVES 2

WATER SUPPLY 2

HATCHERY FACILITIES 2

SPRING CHINOOK TRAPPING 4

SALMON RELEASES FOR TRIBAL FISHERY 4

SPRING CHINOOK SPAWNING INFORMATION 4

SUMMER CHINOOK TRAPPING 4

SPRING AND SUMMER CHINOOK SPAWNING TECHNIQUE 10

SUMMER CHINOOK SPAWNING INFORMATION 10

SOUTH FORK SUMMER CHINOOK EGGS 10

FISH PRODUCTION 10

FISH HEALTH 11

HATCHERY IMPROVEMENTS 11

STAFFING 11

ACKNOWLEDGEMENTS 11

LIST OF FIGURES

Figure 1. Brood year rearing water temperatures 3

Figure 2. Run timing of adult chinook 5

Figure 3. Length frequency of male spring chinook 6

Figure 4. Length frequency of female spring chinook 7

LIST OF FIGURES (Cont.)

Page

Figure 5. Length frequency of male summer chinook 8

Figure 6. Length frequency of female summer chinook 9

LIST OF APPENDICES

Appendix 1. Length frequency of adult chinook salmon 13

Appendix 2. Return rate of spring and summer chinook at Pahsimeroi 14

Appendix 3. Fish and feed numbers for 1987 brood year 15

ABSTRACT

Chinook salmon trapping began on May 10 and concluded on September 30. A total of 2,175 spring chinook (925 males, 1,215 females, and 35 jacks) and 473 summer chinook (240 males, 220 females, and 13 jacks) were trapped during 1987. Spring chinook were not treated externally or injected with Erythromycin Phosphate and prespawning mortality was to 39%. Summer chinook were injected and prespawning mortality was 8.6%.

Installation of a temporary weir on the Yankee Fork above the town of Custer occurred in early June, and 600 spring chinook (469 males, 125 females, and 6 jacks) were stocked for a Shoshone-Bannock tribal fishery during June, July, and August.

A total of 463 spring chinook females were spawned for 2,128,750 green eggs, of which 1,000,000 were shipped to Irrigon Hatchery in Oregon and the remaining 1,128,750 shipped to Sawtooth Hatchery for other State programs. Fecundity averaged 4,521 eggs per female.

A total of 122 summer chinook females were spawned for 696,004 green eggs. Fecundity averaged 5,704 eggs and an eye-up of 93.1% was achieved. In addition, 605,091 eyed summer chinook eggs were received from McCall Hatchery (South Fork Salmon River).

Both lots of summer chinook smolts were released during March of 1989. Pahsimeroi stock smolts totaled 536,500 (16.5 per lb, 32,515 lbs) and achieved a conversion of 1.59, while South Fork stock totaled 479,800 (15.2 per lb, 31,564 lbs) and achieved a conversion of 1.64.

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INTRODUCTION

Pahsimeroi Hatchery is owned and funded by Idaho Power Company (IPC) and is operated by the Idaho Department of Fish and Game (IDFG). The salmon and steelhead programs are mitigation for the IPC dams constructed on the Snake River in Hells Canyon. The hatchery is located near Ellis, Idaho, one mile upstream on the Pahsimeroi River, with the rearing ponds located at a separate facility seven miles upstream.

OBJECTIVES

The objectives of the Pahsimeroi Hatchery are:

1) To rear one million summer chinook smolts for release into the Pahsimeroi River.

2) To trap and spawn summer chinook adults returning to the Pahsimeroi River.

WATER SUPPLY

Water for the hatchery, approximately 60 cfs, is supplied by the Pahsimeroi River and varies in temperature from 32°F during the winter to 64°F in summer. The river water has a high organic load during winter, but is quite clean during the summer months. In addition, the hatchery has .5 cfs spring water available for its egg incubation system. Its temperature varies from 52°F in the winter to 55°F in the summer, and it has a pH of 7.8 (Figure 1).

HATCHERY FACILITIES

Located on the hatchery is a fish trap consisting of three concrete pens measuring 15 ft x 75 ft x 3.5 ft deep. Adult fish are held in these pens until they are spawned. The trap has a series of ladders in the structure and a metal grate that keeps the fish from returning to the river. A 55-foot long weir crosses the Pahsimeroi River to guide the arriving fish into the trap facility.

Near the trap facility lies a residence, two pumphouses, a 10,000-gallon water storage tank, **a** metal shop building, a cinder block office building, a public restroom, an incubator room with capacity for 20 double stacks of Heath incubators, and a building with a two-bedroom dormitory and workshop. Four concrete raceways (4 ft x 100 ft) are used for early rearing of salmon and steelhead fry.

Two dirt rearing ponds (40 ft x 300 ft) are located seven miles above the trap at a separate facility. These are used to rear summer chinook fingerlings to smolts. Other facilities at the upper pond site include a residence, a small

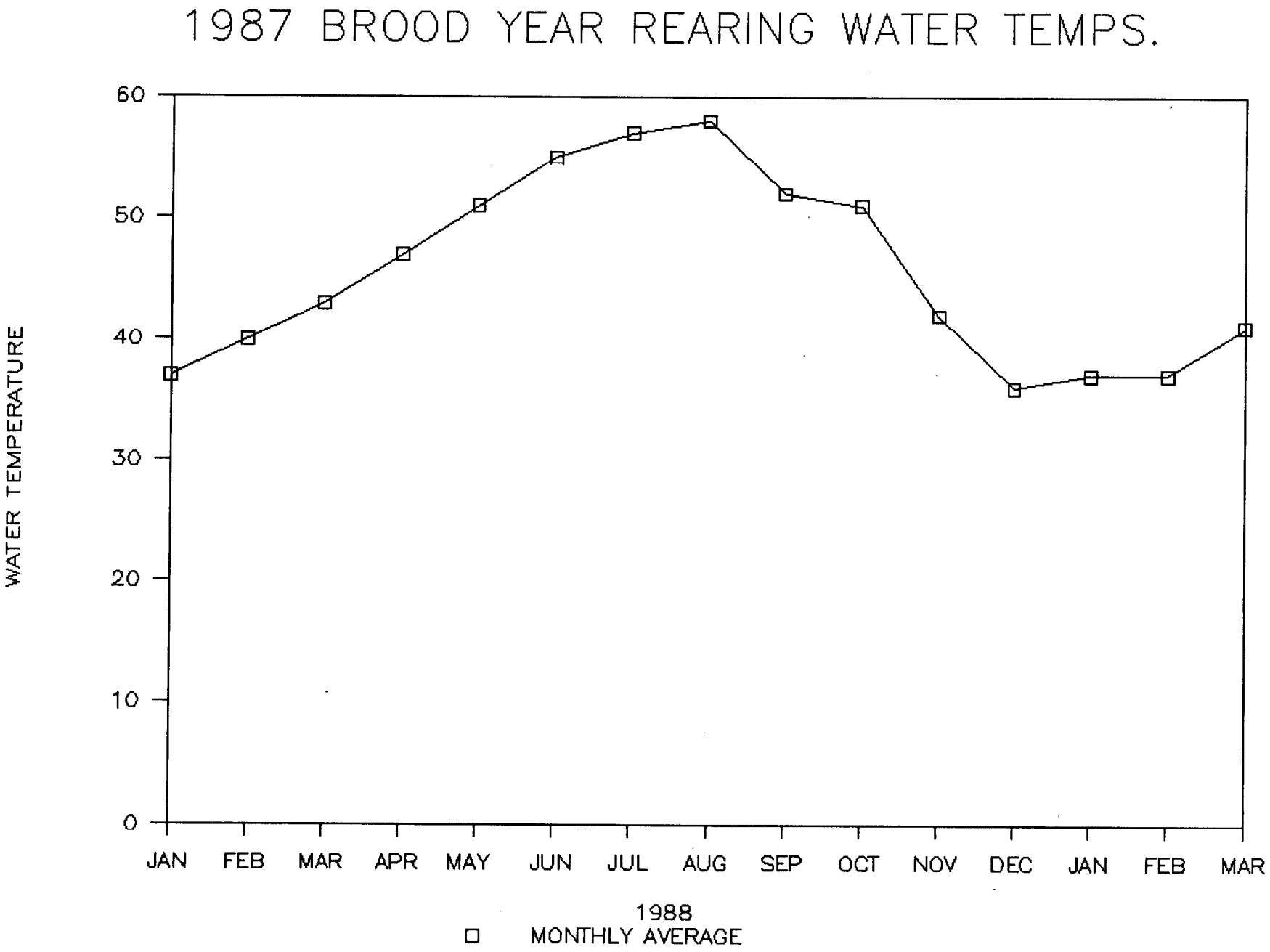

Figure 1. Brood year rearing water temperatures.

storage building, a feed bin for storing dry fish feed, and a walk-in freezer for storing frozen salmon feed.

SPRING CHINOOK TRAPPING

Spring chinook trapping began on May 10 and concluded on June 10 (Figure 2). The run consisted of 925 males, 1,215 females, and 35 jacks for a total of 2,175 fish. Fork length frequencies were taken on all returning adults and are reported in Appendix 1 and Figures 3 and 4. These fish were not injected with Erythromycin Phosphate because 600 were hauled to the Yankee Fork throughout the summer for an Indian fishery. Because the salmon were not injected and were handled almost every week, prespawning mortality was 39% (278 males and 560 females).

SALMON RELEASES FOR TRIBAL FISHERY

A metal weir was installed on the Yankee Fork above the town of Custer to prevent salmon from moving downstream. A total of 469 males, 125 females, and 6 jacks were released above the weir in June, July, and August at 11-Mile Creek on the Yankee Fork. Members of the Shoshone-Bannock Indian tribe then fished this area.

SPRING CHINOOK SPAWNING INFORMATION

Spring chinook spawning began on August 24 and concluded on September 29. A total of 463 females were spawned yielding 2,128,750 green eggs. Fecundity averaged 4,598 eggs per female.

A total of 1,000,000 eggs were shipped to Irrigon Hatchery in Oregon. The remaining 1,128,750 eggs were shipped to Sawtooth Hatchery for other programs.

SUMMER CHINOOK TRAPPING

Trapping for summer chinook started on June 11 and ended on September 30. The run consisted of 461 adults and 13 jacks, for a total of 473 fish (Appendix 1). Length frequencies were taken on all adults (Figures 5 and 6) (Appendix 1). All of the summer chinook were injected with Erythromycin Phosphate. No external chemical treatments were used on these fish during the summer. Prespawning mortalities accounted for the loss of to 29 females and 13 males, or 9% of the run. A total of 151 males, 69 females, and 8 jacks were released above the weir to spawn naturally in the Pahsimeroi River.

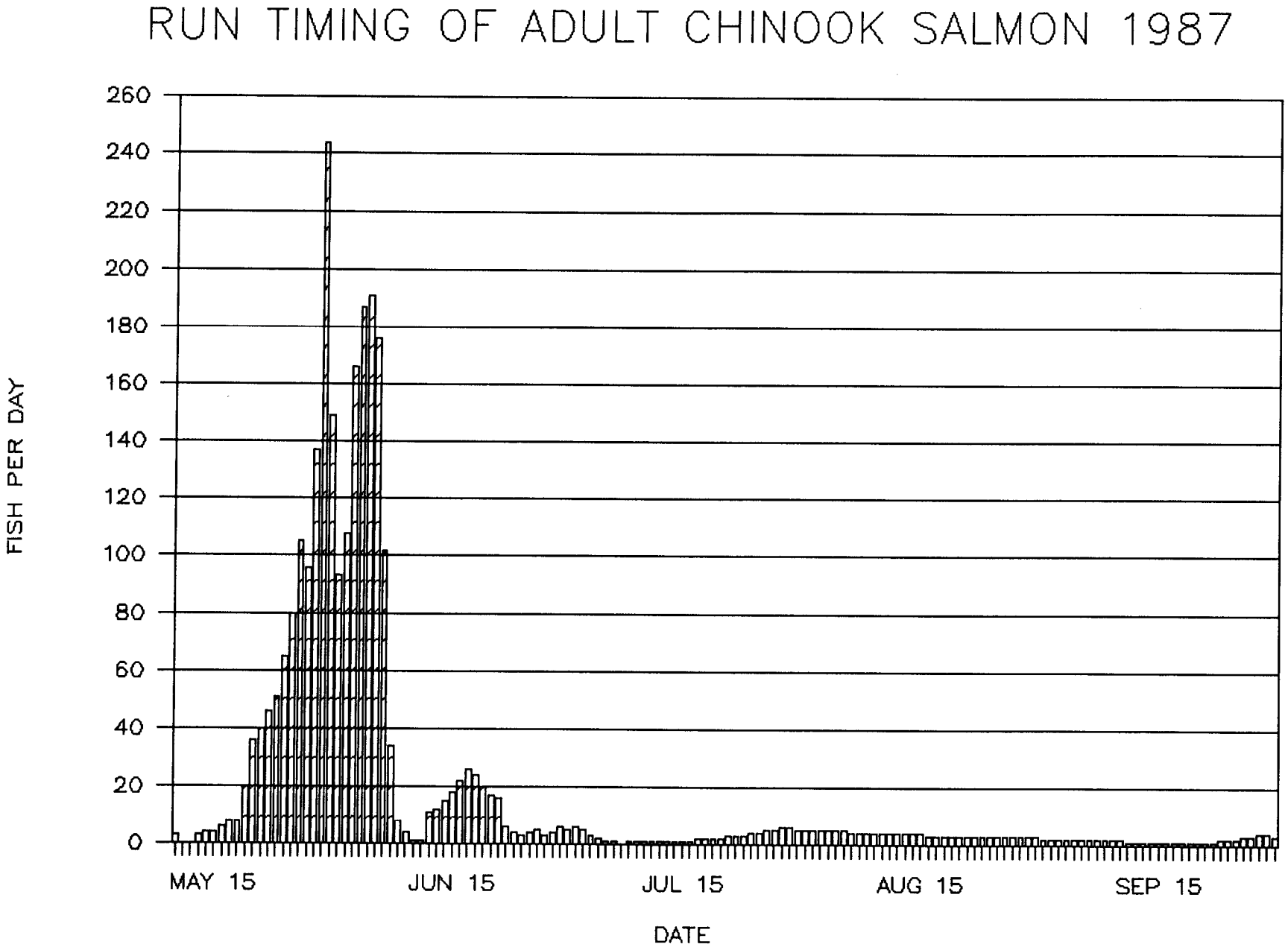

Figure 2. Run timing of adult chinook.

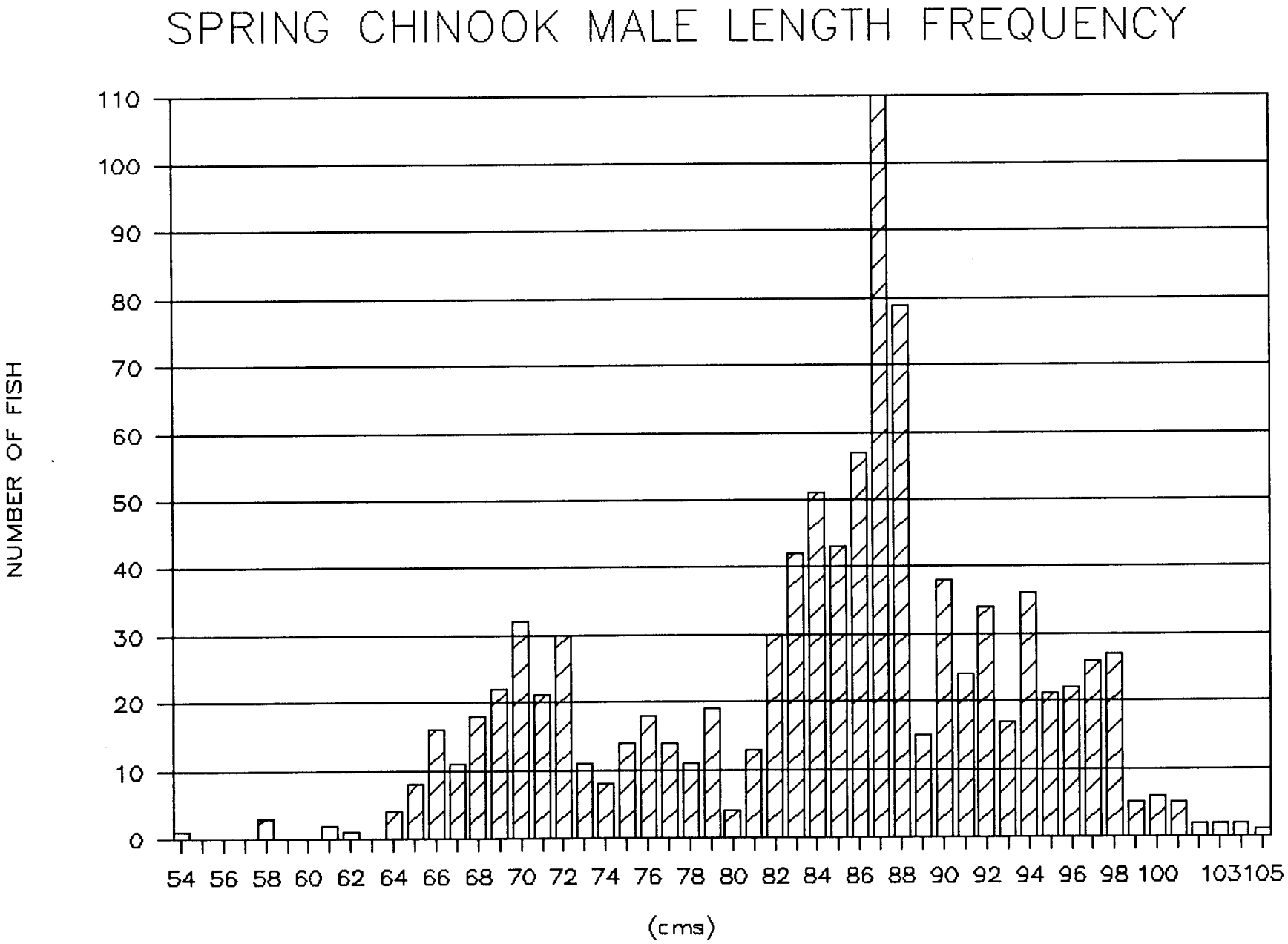

Figure 3. Length frequency of male spring chinook.

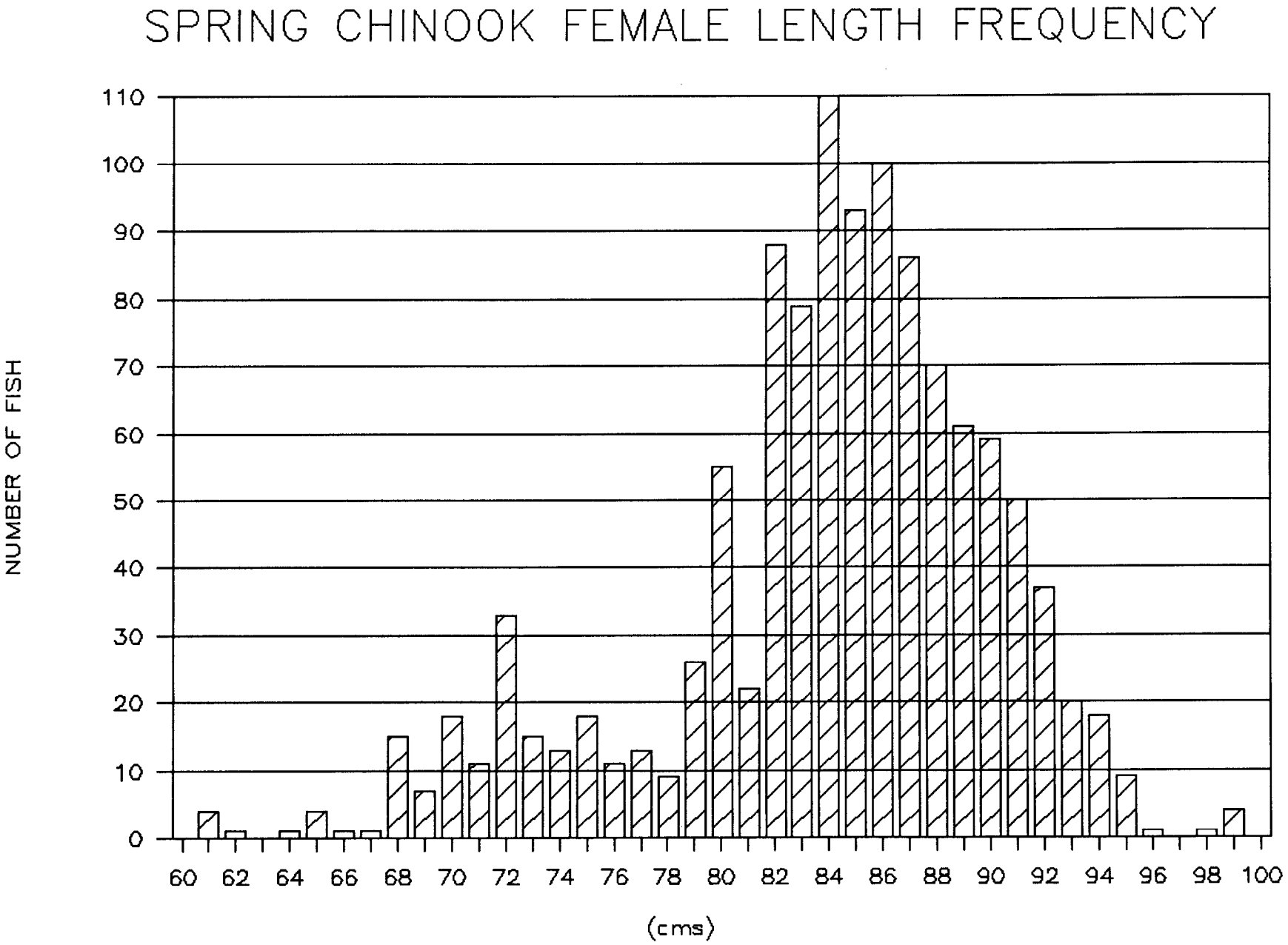

Figure 4. Length frequency of female spring chinook.

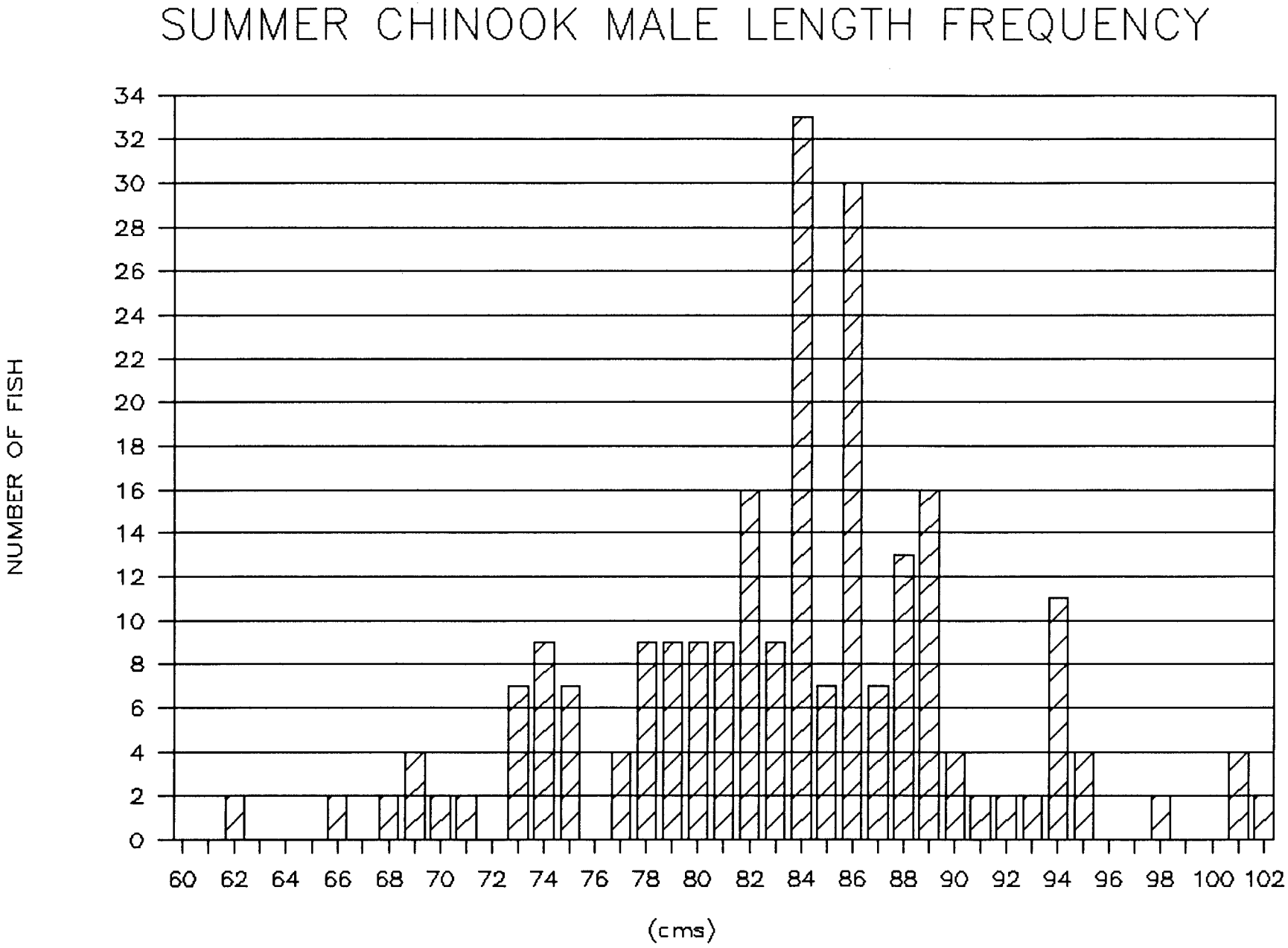

Figure 5. Length frequency of male summer chinook.

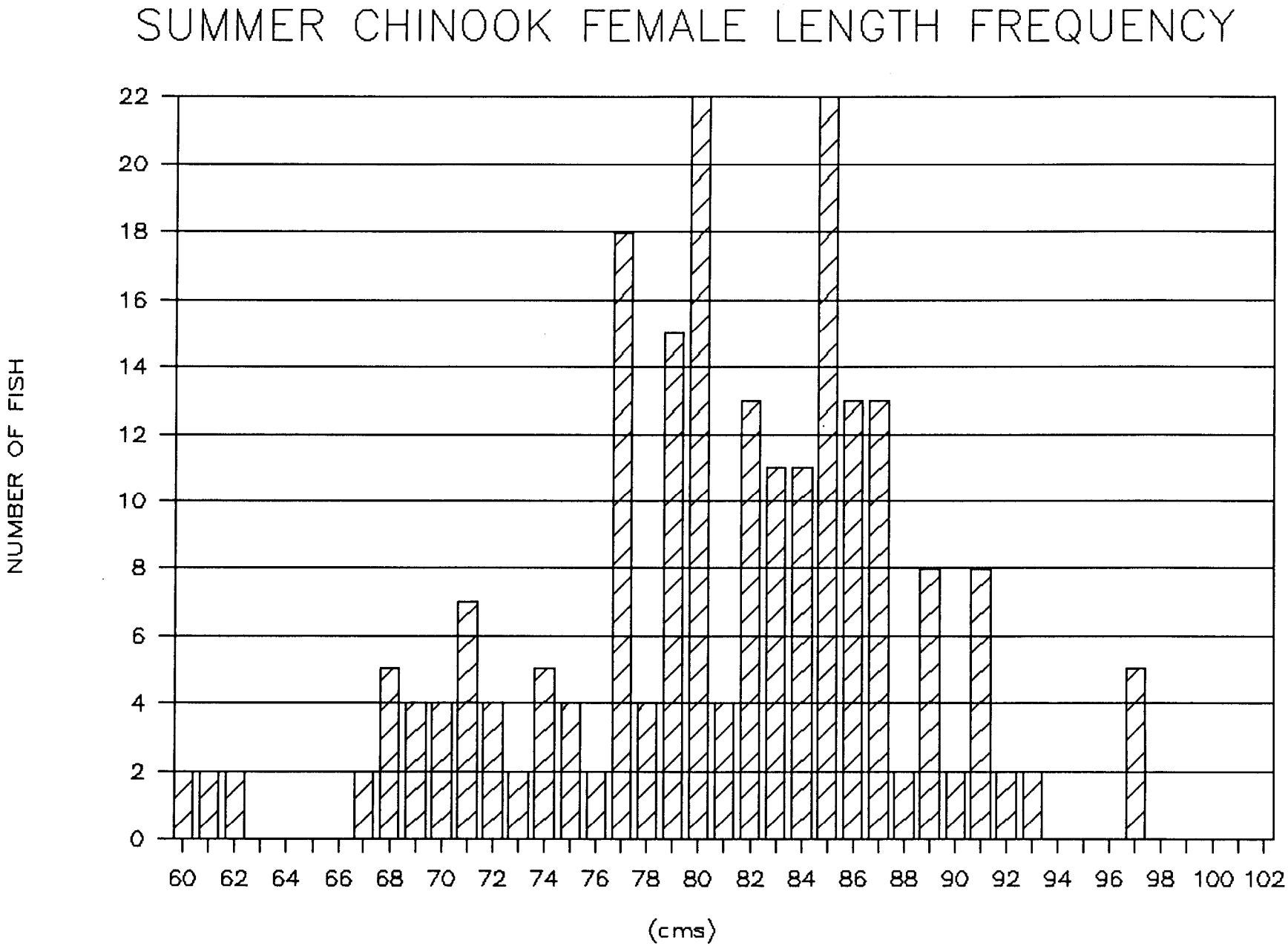

Figure 6. Length frequency of female summer chinook.

SUMMER CHINOOK SPAWNING INFORMATION

Summer chinook spawning started on August 25 and continued until October 2. A total of 122 females were spawned for 696,004 green eggs. An eye-up of 93.1% was achieved and fecundity averaged 5,704 eggs/female.

SOUTH FORK SUMMER CHINOOK EGGS

Two groups of eyed South Fork Salmon River summer chinook eggs, totaling 605,091, were received from McCall Hatchery in early October. These eggs were used to help rebuild the Pahsimeroi summer chinook run.

SPRING AND SUMMER CHINOOK SPAWNING TECHNIQUE

Females were sorted twice a week for ripeness. Ripe fish were killed by a blow to the head and bled by severing the caudal artery. Salmon were spawned at a ratio of one male to one female. After eggs from three females were spawned into separate buckets containing sperm, they were poured into one bucket for transport to the incubators. They were treated with a 100-ppm iodine solution (Argentyne) in the incubators for one-half hour.

Eggs were treated daily with formalin at a concentration of 1,667 ppm to reduce fungus. After the eggs eyed-up, dead eggs were removed and live eggs were counted using the displacement method.

After the summer chinook eggs were eyed-up and picked, the incubator water system was switched from spring water to the cooler river water to retard fry development.

FISH PRODUCTION

Transfer of salmon fry into the raceways began during mid-December, while the bulk of the fry were moved during February and March. These fish were initially hand fed at **a** rate of 3% body weight, but were reduced to .6% by November 1 using growth projections (Appendix 3).

Both lots of summer chinook were transported to the upper rearing ponds during April. A total of 521,968 South Fork stock were transferred to Pond 1, while 576,815 Pahsimeroi stock were transferred to Pond 2.

All chinook were fed Oregon moist pellets. The conversion rate for the Pahsimeroi stock was 1.59, while the South Fork stock had a conversion rate of 1.64.

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Both lots of summer chinook smolts were released during March of 1989. Pahsimeroi stock smolts totaled 536,500 (16.5 per lb, 32,515 lbs), while the South Fork stock totaled 479,800 (15.2 per lb, 31,564 lbs).

FISH HEALTH

Whirling disease was again diagnosed in these fish. Both groups were affected, but no significant losses were observed. Blackened tails appeared in early June as the first sign of the disease, and whirling followed shortly thereafter. Whirling was most evident when the fish were "spooked," such as walking out on a pond feeder ramp.

HATCHERY IMPROVEMENTS

Many new improvements were made at the hatchery this year. A new ramp was constructed for unloading steelhead smolts. Pressurized water was plumbed into the incubator room and the egg-picking table rebuilt. The office was expanded and a new eight-foot bulletin board was built and installed. Shelving was constructed in both residence garages, the office, and storage shed. Drum screens were dismantled and broken water fins welded. New nylon bushings were also installed. A two-foot extension fence was added to the trap fence. Birch trees, rose bushes, small evergreens, and numerous flowers were planted, and the lawn re-seeded. An IBM computer was received from IPC and numerous programs were written to aid and monitor fish production.

STAFFING

The hatchery is staffed with two permanent employees: a Hatchery Superintendent II and a Hatchery Superintendent I. Several temporaries are employed at various times of the year to help with trapping and spawning steelhead and salmon.

ACKNOWLEDGEMENTS

The crew at Pahsimeroi Hatchery would like to express their appreciation to Warren Groberg and all the Oregon Department of Fish and Wildlife hatchery personnel who helped spawn spring chinook salmon. We would also like to thank Mr. Larry Wimer and the staff of Idaho Power Company for their continued support.

A P P E N D I C E S

Appendix 1. Adult chinook fork length frequency, 1987.

	Springs		Summers	
(cms)	males	females	males	
54	1	0	0	0
58	3	0	0	0
60	0	0	0	2
61	2	4	0	2
62	1	1	2	2
63	0	0	0	0
64	4	1	0	0
65	8	4	0	0
66	16	1	2	0
67	11	1	0	2
68	18	15	2	5
69	22	7	4	4
70	32	18	2	4
71	21	11	2	7
72	30	33	0	4
73	11	15	7	2
74	8	13	9	5
75	14	18	7	4
76	18	11	0	2
77	14	13	4	18
78	11	9	9	4
79	19	26	9	15
80	4	55	9	22
81	13	22	9	4
82	30	88	16	13
83	42	79	9	11
84	51	110	33	11
85	43	93	7	22
86	57	100	30	13
87	110	86	7	13
88	79	70	13	2
89	15	61	16	8
90	38	59	4	2
91	24	50	2	8
92	34	37	2	2
93	17	20	2	2
94	36	18	11	0
95	21	9	4	0
96	22	1	0	0
97	26	0	0	5
98	27	1	2	0
99	5	4	0	0
100	6	0	0	0
101	5	0	4	0
102	2	0	2	0
103	2	0	0	0
104	2	0	0	0
105	1	0	0	0
TOTALS	976	1,164	241	220
	2140		461	

Appendix 2. Return rate of spring and summer chinook at Pahsimeroi Hatchery.

Brood year	Release date	Smolts released	Returns 1-ocean	2-ocean	3-ocean	Tota	Percent
			Summer Chinook				
1986	1970	300,000	89	544	40	673	0.220
1969	1971	250,000	40	486	9	535	0.210
1970	1972	250,000	20	143	105	268	0.110
1971	1973	347,000	3	17	32	52	0.015
1972	1974	330,000	12	286	436	734	0.220
1973	1975	114,000	53	115	*		
1974	1976	121,000	7	*	54		
1975	1977	235,000	*	10	4		
1976	1978	218,000	2	29	9	40	0.018
1981	1983	13,700	13	72	30	115	0.840
1982	1984	55,800	27	278	52	357	0.640
1983	1985	209,150	37	409	716	1,162	0.560
1984	1986	12,100	13	47			
1985	1987	258,600	75				
1986	1988	598,500					
1987	1989	1,016,300					
			Spring				
1981	1983	437,300	97	1,568	398	2,06	0.470
1982	1984	1,143,000	480	6,019	1,463	7,96	0.700
1983	1985	178,800	101	677	216	994	0.560
1984	1986	81,000	35	185	56	276	0.340

*Trap not in operation during 1978.

Fork Lengths:

1-ocean - 64 cm or less.
2-ocean - 65 cm through 82 cm in length.
3-ocean - 83 cm and larger.

Appendix 3. Fish and feed numbers for 1987 brood year.

1988 FISH AND FEED PROJECTIONS

Bags/ 2 wks	Date	# fish	Weight	Fish/lb	% bd wt	Feed/ day	Gain/ 2 wks
	Dec 31	1,113,739	825	1,350.00	0.0200	17.2	127
4.1	Jan 15	1,113,739	953	1,175.00	0.0200	14.5	107
4.8	Jan 31	1,111,639	1,026	1,100.00	0.0200	17.0	264
7.3	Feb 15	1,110,294	1,292	874.00	0.0300	26.1	289
13.2	Feb 29	1,108,724	1,572	729.00	0.0300	47.2	406
18.7	Mar 15	1,107,714	1,969	591.00	0.0300	66.7	544
21.5	Mar 31	1,098,355	2,522	455.00	0.0300	76.9	1,229
34.9	Apr 15	1,086,270	3,749	300.00	0.0300	124.5	1,378
39.1	Apr 30	1.098,551	5,176	220.00	0.0260	139.5	1,602
48.2	May 15	1,081,856	6,786	160.00	0.0240	172.2	2,542
60.0	May 31	1,071,038	9,339	115.00	0.0220	214.2	3,320
67.7	Jun 15	1,060,900	12,659	83.81	0.0210	241.9	3,749
78.0	Jun 30	1,060,354	15,165	70.00	0.0190	278.7	3,692
96.5	Jul 15	1,055,053	18,862	56.00	0.0170	344.5	4,487
102.0	Jul 31	1,049,778	23,346	45.00	0.0161	364.4	3,869
126.3	Aug 15	1,044,529	27,147	38.50	0.0160	451.0	6,079
136.8	Aug 31	1,039,306	33,258	31.25	0.0140	488.4	5,047
124.7	Sep 15	1,034,109	38,300	27.00	0.0120	445.2	2,430
108.4	Sep 30	1,028,938	40,738	25.26	0.0100	387.0	3,749
115.6	Oct 15	1,023,794	44,489	23.01	0.0090	412.9	4,812
80.4	Oct 31	1,018,675	49,309	20.66	0.0060	287.1	3,296
31.6	Nov 15	1,018,475	52,607	19.36	0.0050	112.9	1,101
23.5	Nov 30	1,018,275	53,709	18.96	0.0020	83.9	856
19.9	Dec 15	1,018,075	54,563	18.66	0.0020	70.9	670
30.9	Dec 31	1,017,875	55,234	18.43	0.0020	110.5	1,044
31.4	Jan 15	1,017,675	55,983	18.18	0.0020	112.0	1,039
47.3	Jan 31	1,017,475	56,282	18.08	0.0030	168.8	1,567
96.1	Feb 15	1,017,275	57,189	17.79	0.0060	343.1	3,223
133.2	Feb 28	1,017,075	59,453	17.11	0.0080	475.6	4,029
140.9	Mar 15	1,016,875	62,913	16.16	0.0080	503.3	1,827
143.5	Mar 31	1,016,675	64,079	15.87	0.0080	512.6	3,857

SIZE OF FISH

From	1,400	1,350	500	250	150	50
To	1,350	500	250	150	50	Move

FEED SIZE

Starter	1/32	3/64	1/16	3/32	1/8	Total feed

LBS FEED FED

0	4,802	2,820	1,953	17,521	74,615	101,711

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